

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the present application:

1. (Currently amended) An apparatus comprising ~~Apparatus including:~~

a disk drive housing defining a volume large enough to include an ATA disk drive therein, said disk drive housing having a form factor and electrical interface compatible with a fiber channel disk drive housing;

an adaptor in said housing, said adaptor including an ATA disk drive coupling element and at least two fiber channel backplane coupling elements;

a programmable switch coupled to said fiber channel backplane coupling elements to control selection of one of at least two paths, wherein the ATA disk drive is coupled to a fiber channel backplane via a selected one of the at least two paths without physically removing the ATA disk drive from the disk drive housing by which the ATA disk drive can be coupled to a fiber channel backplane;

a serial-to-parallel converter in a first one of the at least two paths, said serial-to-parallel converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to said ATA disk drive and emitting a set of parallel ATA disk drive signals; and

a parallel-to-serial converter in a second one of the at least two paths, said parallel-to-serial converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA

disk operatively coupled to said ATA disk drive and emitting a set of serial ATA disk drive signals.

2. (Cancelled).

3. (Original) Apparatus as in claim 1, wherein each of said fiber channel backplane coupling elements includes an port capable of being coupled to a power source, whereby said ATA disk drive coupling is capable of receiving input power from a selectable source.

4. (Original) Apparatus as in claim 1, wherein said switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said switch.

5. (Currently amended) ~~Apparatus including~~ An apparatus comprising:
a disk drive housing including an ATA disk drive, said disk drive housing having a form factor and electrical interface compatible with a fiber channel disk drive housing;

an adaptor in said housing, said adaptor including an ATA disk drive coupling element coupled to said ATA disk drive, and at least two fiber channel back-plane coupling elements;

a switch coupled to said fiber channel backplane coupling elements to select one of at least two paths in response, said switch being capable of being coupled to a switching signal, wherein the ATA disk drive is coupled to a fiber channel backplane via a selected one of the at least two paths without physically removing the ATA disk drive from the disk drive housing;

a serial-to-parallel converter in a first one of the at least two paths, said serial-to-parallel converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to said ATA disk drive and emitting a set of parallel ATA disk drive signals; and

a parallel-to-serial converter in a second one of the at least two paths, said parallel-to-serial converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to said ATA disk drive and emitting a set of serial ATA disk drive signals.

6. (Cancelled).

7. (Original) Apparatus as in claim 5, wherein each of said fiber channel back-plane coupling elements includes an port capable of being coupled to a power source, whereby said ATA disk drive is capable of receiving input power from a selectable source.

8. (Original) Apparatus as in claim 5, wherein said switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said switch.

9. (Currently amended) ~~Apparatus including~~ An apparatus comprising:

a disk drive housing including an ATA disk drive, said disk drive housing having a form factor and electrical interface compatible with a fiber channel disk drive housing;

an adaptor in said housing, said adaptor including an ATA disk drive coupling element coupled to said ATA disk drive, and at least two fiber channel back-plane coupling elements; and

a first switch coupled to said fiber channel backplane coupling elements, said first switch being capable of being coupled to a switching signal;

a first path from said first switch to said ATA disk drive, said first path including a serial-to-parallel converter, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to the ATA disk drive and emitting a set of parallel ATA disk drive signals;

a second path from said first switch to said ATA disk drive, wherein said second path includes a parallel-to-serial converter capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and emitting a set of serial ATA disk drive signals; and

a second switch coupled to said first path and said second path, said second switch being capable of selecting a connection to said ATA disk drive using either said first path or said second path without physically removing the ATA disk drive from the disk drive housing.

10. (Original) Apparatus as in claim 9, wherein each of said fiber channel back-plane coupling elements includes an port capable of being coupled to a power source, whereby said ATA disk drive is capable of receiving input power from a selectable source.

11. (Original) Apparatus as in claim 9, wherein said first switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said first switch.

12. (Original) Apparatus as in claim 9, wherein said second switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said second switch.

13. (Original) Apparatus as in claim 9, wherein said second switch is capable of being coupled to a second switching signal.

14. (Currently amended) ~~Apparatus including~~ An apparatus comprising:
a first housing including (a) a first ATA disk drive having a parallel ATA disk drive coupling element, said first housing having a form factor and electrical interface compatible with a fiber channel disk drive housing, (b) a first adaptor in said first housing, said first adaptor including an ATA disk drive coupling element coupled to said first ATA disk drive, and at least two fiber channel backplane coupling elements, and (c) a switch coupled to said fiber channel backplane coupling elements in said first housing, said switch being capable of selecting one path out of at least two paths in response being coupled to a switching signal, wherein the first ATA disk drive is coupled to a fiber channel backplane via a selected one of the at least two paths without physically removing the first ATA disk drive from the disk drive housing;

a second housing including (a) a second ATA disk drive, said second housing having a form factor and electrical interface compatible with a fiber channel disk drive housing, (b) a second adaptor in said second housing, said second adaptor including an ATA disk drive coupling element coupled to said

second ATA disk drive, and at least two fiber channel backplane coupling elements, and (c) a switch coupled to said fiber channel backplane coupling elements in said second housing, said switch being capable of being coupled to a switching signal;

a fiber channel backplane coupled to said first housing and to said second housing;

a serial-to-parallel converter in a first path of said at least two paths in said first housing, said serial-to-parallel converter being coupled to said ATA disk drive coupling element, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk and emitting a set of parallel ATA disk drive signals; and

a parallel-to-serial converter in a first path of said at least two paths in said first housing, said parallel-to-serial converter being coupled to said ATA disk drive coupling element, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk and emitting a set of serial ATA disk drive signals.

15. (Previously presented) Apparatus as in claim 14, wherein said second ATA disk drive includes a serial ATA disk drive coupling element.

16. (Original) Apparatus as in claim 14, wherein each of said fiber channel back-plane coupling elements includes an port capable of being coupled to a power source, whereby each of said ATA disk drives is capable of receiving input power from a selectable source.

17. (Original) Apparatus as in claim 14, wherein either said first switch or said second switch includes an input port capable of receiving instructions, said

instructions being interpretable by a computing device to control either said first switch or said second switch.

18. (Currently amended) ~~Apparatus including~~ An apparatus comprising:
an ATA disk drive coupling element;
at least two fiber channel backplane coupling elements;
a first programmable switch coupled to said fiber channel backplane elements, wherein an ATA disk drive is capable of being coupled to a selected one of said at least two fiber channel backplane coupling elements in response to said first programmable switch;
a second programmable switch coupled to said ATA disk drive, said second programmable switch is capable of communicatively coupling said ATA disk drive to one of at least two paths without removing the ATA disk drive from the ATA disk drive coupling element;
a serial-to-parallel converter in a first path of the at least two paths, said serial-to-parallel converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to the ATA disk drive and emitting a set of parallel ATA disk drive signals; and
a parallel-to-serial converter in a second path of the at least two paths, said parallel-to-serial converter being within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and emitting a set of serial ATA disk drive signals.

19. (Cancelled).

20. (Currently amended) Apparatus as in claim 18, wherein each of said fiber channel back-plane coupling elements includes ~~[[an]]~~ a port capable of being coupled to a power source, whereby said ATA disk drive coupling is capable of receiving input power from a selectable source.

21. (Original) Apparatus as in claim 18, wherein said switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said switch.

22. (Currently amended) ~~Apparatus including~~ An apparatus comprising:
an ATA disk drive coupling element capable of being coupled to an ATA disk drive, said ATA disk drive coupling element and said ATA disk drive being disposable within a disk drive housing having a form factor and electrical interface compatible with a fiber channel disk drive housing;
at least two fiber channel backplane coupling elements;
a switch coupled to said fiber channel backplane coupling elements, said switch being capable of selecting one path out of at least two paths in response to being coupled to a switching signal, wherein the ATA disk drive is coupled to said fiber channel backplane coupling elements via a selected one of the at least two paths;

a serial-to-parallel converter, said serial-to-parallel converter being in a first one of the at least two paths within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk

operatively coupled to the ATA disk drive and emitting a set of parallel ATA disk drive signals; and

a parallel-to-serial converter, said parallel-to-serial converter being in a second one of the at least two paths within said disk drive housing and coupled to said ATA disk drive coupling element, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and emitting a set of serial ATA disk drive signals.

23. (Cancelled).

24. (Original) Apparatus as in claim 22, wherein each of said fiber channel back-plane coupling elements includes an port capable of being coupled to a power source, whereby said ATA disk drive is capable of receiving input power from a selectable source.

25. (Original) Apparatus as in claim 22, wherein said switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said switch.

26. (Currently amended) ~~Apparatus including~~ An apparatus comprising:
an ATA disk drive coupling element capable of being coupled to an ATA disk drive within a disk drive housing having a form factor and electrical interface compatible with a fiber channel disk drive housing;

at least two fiber channel backplane coupling elements;

a first switch coupled to said fiber channel backplane coupling elements,

said first switch being capable of being coupled to a switching signal;

a first path from said first switch to said ATA disk drive coupling element, said first path including a serial-to-parallel converter, wherein said serial-to-parallel converter is capable of receiving a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to the ATA disk drive and emitting a set of parallel ATA disk drive signals;

a second path from said first switch to said ATA disk drive coupling element, wherein said second path including a parallel-to-serial converter, wherein said parallel-to-serial converter is capable of receiving a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and emitting a set of serial ATA disk drive signals; and

a second switch coupled to said first path and said second path, said second switch being capable of selecting a connection to said ATA disk drive using either said first path or said second path without removing the ATA disk drive from the fiber channel disk drive housing.

27. (Original) Apparatus as in claim 26, wherein each of said fiber channel back-plane coupling elements includes an port capable of being coupled to a power source, whereby said ATA disk drive coupling element is capable of receiving input power from a selectable source.

28. (Original) Apparatus as in claim 26, wherein said first switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said first switch.

29. (Original) Apparatus as in claim 26, wherein said second switch includes an input port capable of receiving instructions, said instructions being interpretable by a computing device to control said second switch.

30. (Original) Apparatus as in claim 26, wherein said second switch is capable of being coupled to a second switching signal.

31. (Currently amended) An apparatus comprising:
an adaptor coupled to a disk drive housing to couple an Advanced Technology Attachment (ATA) disk drive within the disk drive housing to one of a plurality of fiber channel backplanes;

a programmable switch coupled to said adaptor to select one out of at least two paths, wherein the ATA disk drive is coupled via a selected one of the at least two paths to the one of the plurality of fiber channel backplanes without removing the ATA disk drive from the disk drive housing;

a serial-to-parallel converter in a first path of the at least two paths, coupled to the adaptor to receive a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to the ATA disk drive and to emit a set of parallel ATA disk drive signals; and

a parallel-to-serial converter in a second path of the at least two paths, coupled to the adaptor to receive a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and to emit a set of serial ATA disk drive signals.

32. (Canceled).

33. (Currently amended) The apparatus of claim 31 [[32]], wherein the programmable switch includes an input port to receive instructions interpretable by a computing device to control the switch.

34. (Previously presented) The apparatus of claim 31, wherein the adaptor comprises:

an ATA disk drive coupling element; and
a plurality of fiber channel backplane coupling elements.

35. (Previously presented) The apparatus of claim 34, wherein each of the plurality of fiber channel backplane coupling elements comprises a port to couple to a power source, wherein the ATA disk drive coupling element is operable to receive input power from the power source.

36. (Currently amended) A method comprising:

coupling an Advanced Technology Attachment (ATA) disk drive within a disk drive housing via an adaptor to one of a plurality of fiber channel backplanes; and

adapting the ATA disk drive to operate on a serial ATA disk and a parallel ATA disk by

operating a switch in response to a control signal to select one of at least two paths, wherein the ATA disk drive is coupled to a selected one of the at least two paths without removing the ATA disk drive from the disk drive housing,

coupling a serial-to-parallel converter to the adaptor via a first one of the at least two paths to receive a set of serial ATA disk drive signals from a serial ATA disk operatively coupled to the ATA disk drive and to emit a set of parallel ATA disk drive signals, and

coupling a parallel-to-serial converter to the adaptor via a second one of the at least two paths to receive a set of parallel ATA disk drive signals from a parallel ATA disk operatively coupled to the ATA disk drive and to emit a set of serial ATA disk drive signals.

37. (Previously presented) The method of claim 36, further comprising:
switching between the serial-to-parallel converter and the parallel-to-serial converter in response to a signal.

38. (New) An apparatus comprising:
an adaptor coupled to a disk drive housing to couple an Advanced Technology Attachment (ATA) disk drive within the disk drive housing to one of a plurality of fiber channel backplanes; and
a programmable switch coupled to said adaptor to select one out of at least two paths without removing the ATA disk drive from the disk drive housing, wherein the ATA disk drive is communicatively coupled to a serial-to-parallel converter if a first path of the at least two paths is selected and the ATA disk drive is communicatively coupled to a parallel-to-serial converter if a second path of the at least two paths is selected.

39. (New) The apparatus of claim 38, further comprising the parallel-to-serial converter and the serial-to-parallel converter.

40. (New) The apparatus of claim 38, wherein the programmable switch includes an input port to receive instructions interpretable by a computing device to control the switch.

41. (New) The apparatus of claim 38, wherein the adaptor comprises:
an ATA disk drive coupling element; and
a plurality of fiber channel backplane coupling elements.

42. (New) The apparatus of claim 41, wherein each of the plurality of fiber channel backplane coupling elements comprises a port to couple to a power source, wherein the ATA disk drive coupling element is operable to receive input power from the power source.

43. (New) A method comprising:
coupling an Advanced Technology Attachment (ATA) disk drive within a disk drive housing via a fiber channel backplane connecting element to one of a plurality of fiber channel backplanes;
communicatively couple the one of the plurality of fiber channel backplanes to the ATA disk drive via a serial-to-parallel converter without physically removing the ATA disk drive from the disk drive housing in response to a first signal; and
communicatively couple the one of the plurality of fiber channel backplanes to the ATA disk drive via a parallel-to-serial converter without physically removing the ATA disk drive from the disk drive housing in response to a second signal.

44. (New) The method of claim 43, further comprising:
powering the ATA disk drive with a power source electrically coupled to a port of the fiber channel backplane connecting element.